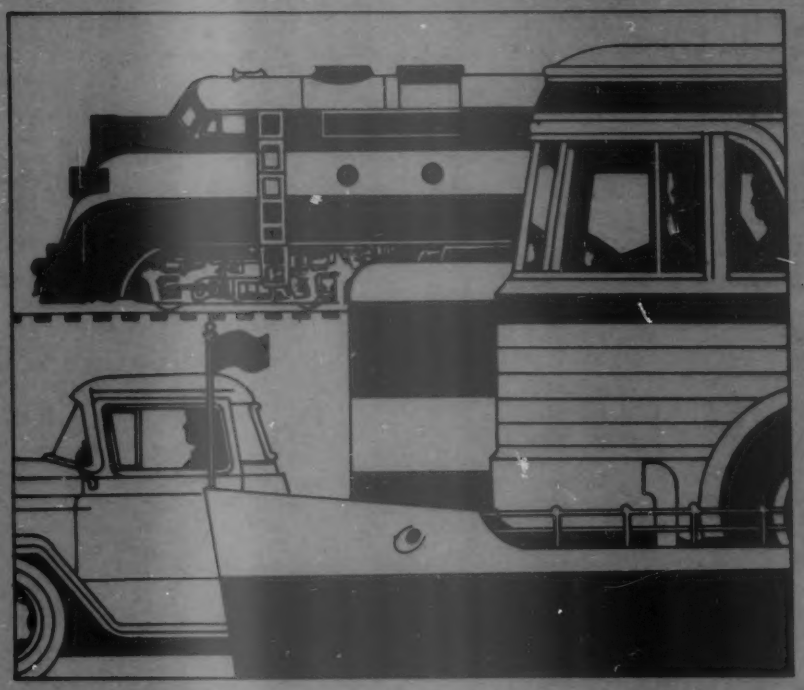
Vol. V No. 2 - 1978

Transport Economics



Bureau of Economics - Interstate Commerce Commission

TRANSPORT ECONOMICS

Bureau of Economics

INTERSTATE COMMERCE COMMISSION

Vol. V No. 2 - 1978

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Note: This release, issued as information, has not been adopted by the

1. Nationwide survey of owner-operators:

The Interstate Commerce Commission's Bureau of Economics has completed a nationwide survey of owner-operators. A report on the survey, *The Independent Trucker: Nationwide Survey of Owner-Operators*, has been released. The report is part of a continuing ICC staff study of independent truckers.

The Commission is considering the report in connection with Ex Parte No. MC-43 (Sub-No. 7), *Lease and Interchange of Vehicles*. The purpose of this investigation is to develop equitable lease arrangements between regulated carriers and their owner-operators.

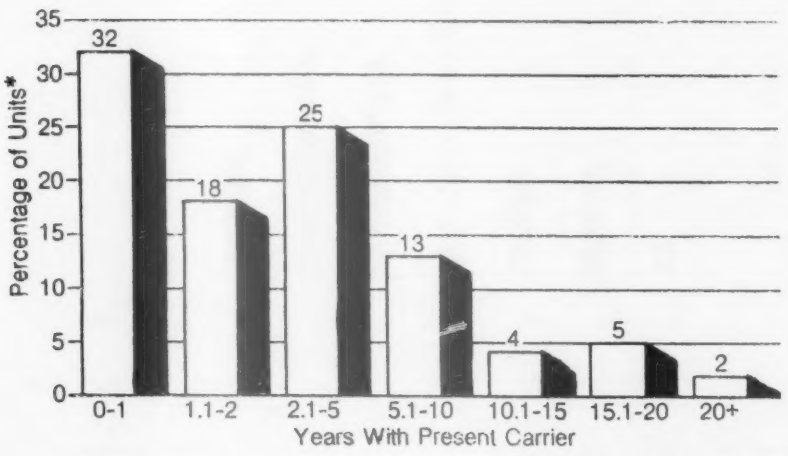
In the survey, the Bureau obtained information directly from 479 owner-operators. Three separate samples were drawn: (1) a sample of permanent leases in which a questionnaire was sent to the owner of the vehicle under lease, (2) a sample of trip leases to owner-operators in which a questionnaire was also sent to the owner of the vehicle under lease, and (3) a subsample of the permanent leases in which ICC staff attorneys tabulated provisions relevant to leasing rules.

The level of interest in this survey was demonstrated by the carriers' willingness to provide information, the owner-operators' response to the questionnaire, and the fact that 75 percent of the respondents took advantage of the opportunity to provide additional comments. Eighty-eight percent of the permanent lease sample and 74 percent of the trip lease sample responded. Questionnaires were received from 323 owner-operators under permanent lease and 156 under trip lease. Telephone follow-ups helped to insure this high rate of response.

Some key results of the survey were:

1. Owner-operators representing 50 percent of permanent leased units had been with their present carrier for 2 years or less.

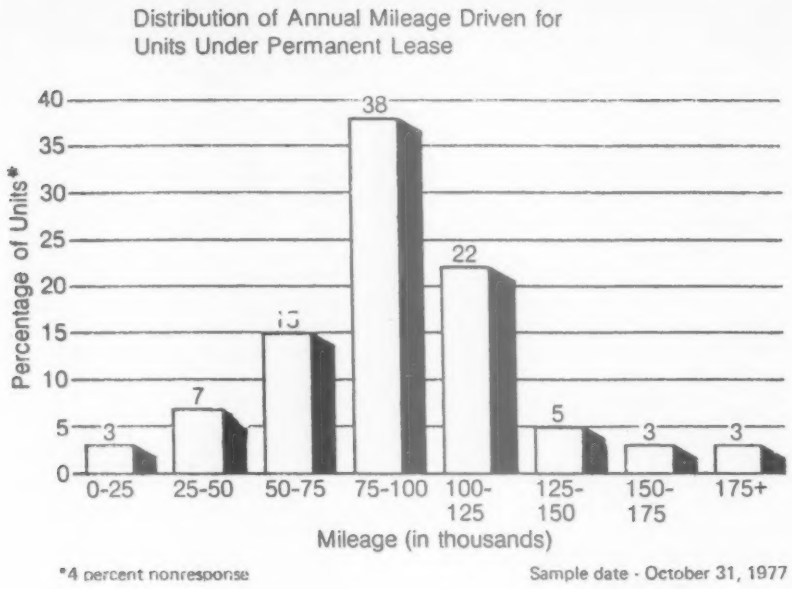
Distribution of Permanent Leased Units by the Number of Years Owner-Operator Has Been With Present Carrier



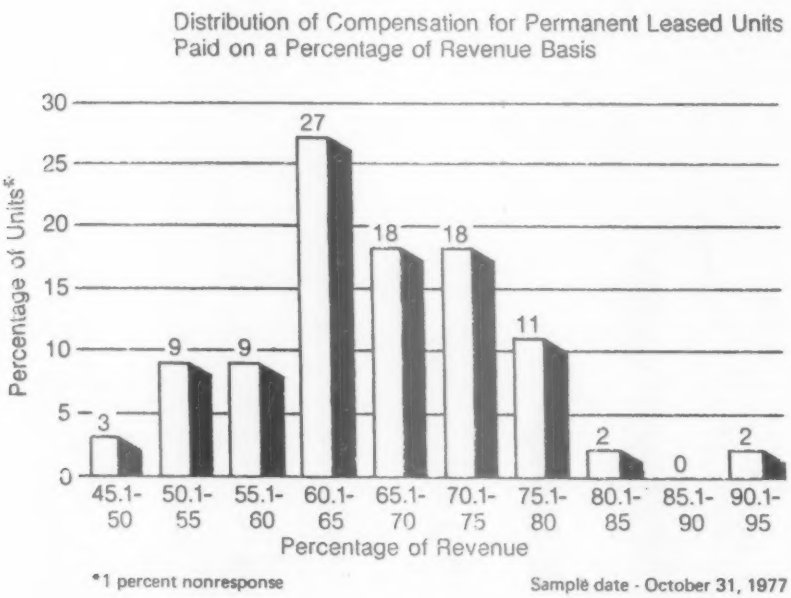
*Less than 1 percent nonresponse

Sample date - October 31, 1977

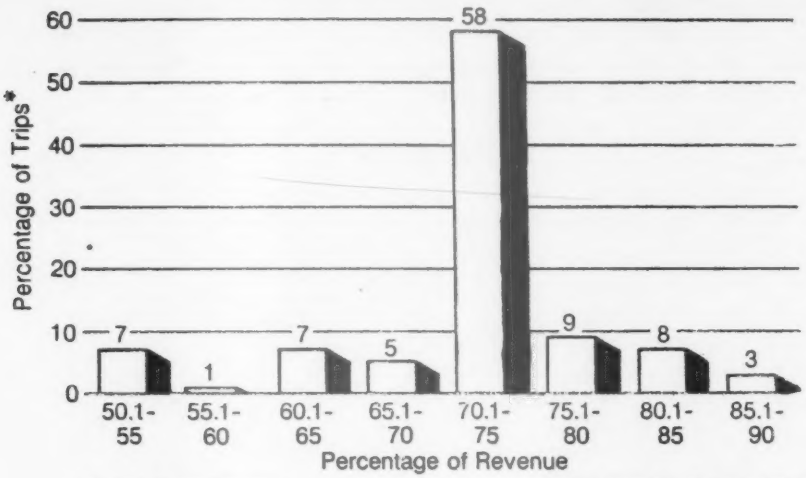
2. Permanently leased power units were driven an average of 91,000 miles a year.



3. Percentage of revenue was the primary basis of pay for permanent and trip leases.



Distribution of Compensation for Trip Leases Paid on a Percentage of Revenue Basis



*2 percent nonresponse

Sample period - October 1977

4. Although owner-operators generally believed paperwork requirements were clearly specified, 29 percent of the leases did not specify these requirements.

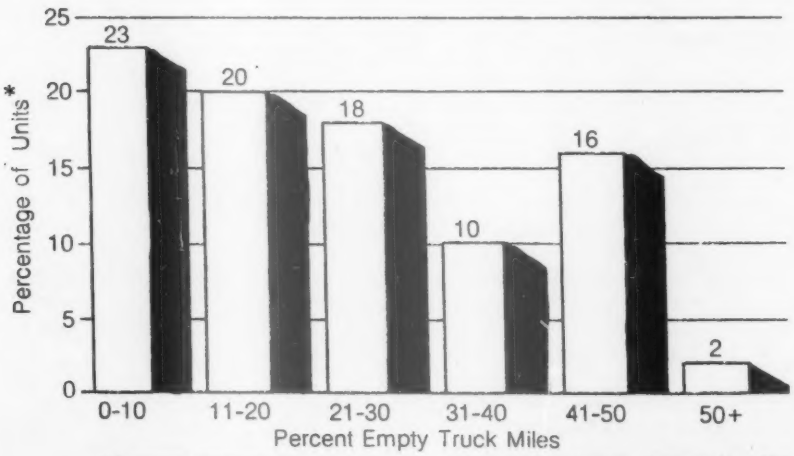
5. The median length of time to turn in paperwork was 2 days and it took 7 days to receive settlement for permanent leases.

6. The median length of time to turn in paperwork was 2 days and it took 10 days to receive settlement for trip leases.

7. A majority of lessors had responsibility for fuel costs and other items associated with transportation services.

8. The average unit under permanent lease was empty 26 percent of the time.

Distribution of Percent Empty Truck Miles for Units Under Permanent Lease



*11 percent nonresponse

Sample date - October 31, 1977

9. Permanent leases did not clearly indicate who was responsible for insurance cost and responsibility.

10. Carriers rarely compensated owner-operators for detention time.

11. A majority of owner-operators ultimately absorbed the cost of the base plate and few were reimbursed for any unused portion.

12. Escrow funds were required in about one-half the permanent leases.

Distribution of amounts required by permanent leases for escrow funds

Amount *Dollars*	Percent of permanent leases
200 or less	5
201 - 300	15
301 - 400	5
401 - 500	37
501 - 600	1
601 - 700	2
701 - 800	4
801 - 900	1
901 - 1,000	22
1,000 and over	3
Nonresponse	5

13. Owner-operators had difficulty getting their escrow funds when their leases were terminated.

14. Most owner-operators were not paid interest on their escrow funds.

15. Few owner-operators purchased equipment under long term purchase agreements with their carriers.

16. Only half of the drivers under permanent lease were allowed to trip lease.

17. Opportunities to reduce empty mileage, get more pay, and obtain immediate settlement were the most important reasons mentioned for hauling "hot freight."

18. About half of permanently leased owner-operators had not been previously leased to a regulated carrier.

19. Owner-operators generally paid all fines even if lessee was negligent.

20. A majority of owner-operators received advances.

21. Many owner-operators expressed dissatisfaction with State regulations, particularly with regard to length and weight restrictions.

For additional insight into owner-operator problems, an analysis was made of 901 owner-operator inquiries and complaints received by the Commission's Small Business Assistance Office. The most frequently cited complaint was difficulty in getting paid by the carrier for completed trips.

Copies of the report can be obtained from the Publications Room, Room 1333, Interstate Commerce Commission, Washington, DC 20423, or by contacting the Office of Communications, telephone (202) 275-7252.

2. The intercity bus industry--a preliminary study:

The trend in financial performance of the intercity bus industry during the 1970's is a matter of great concern. In recognition of concerns that the industry may be facing issues which will influence its ability to serve the public in the future, the Bureau of Economics was asked by Chairman O'Neal to conduct a preliminary study to assess the state of the industry.

The role of buses is particularly important because they serve the most extensive network of communities (over 15,000) of any common carrier. They operate at much lower cost and with greater fuel efficiency per passenger mile than do alternative modes.

General growth and prosperity of the industry have been dimmed in recent years by a shrinkage of passenger demand for regular route service. Charter and package express services, by contrast, show growth. This is illustrated in Table 1.

Table 1

Percentage distribution of operating revenues
(Class I carriers)

	1960	1965	1970	1976
Intercity regular route	76.6	74.6	70.8	64.8
Local	5.1	2.2	1.8	1.2
Charter and special service	7.8	10.6	11.1	16.3
Package express	7.0	10.0	14.2	15.2
All other revenue	2.8	2.5	2.1	2.4

Source: *Transport Statistics in the United States* (various years), and American Bus Association, *America's Number 1 Passenger Transportation Services.*

As shown in the table, class I carriers as a group received 76.6 percent of their total revenue from intercity passenger operations in 1960 and only 14.8 percent of their revenue from charter and package express service. By 1976, the share from charter and package service had more than doubled. A decline in the proportion of revenue derived from local passenger operations also occurred.

As a group, class I carriers have experienced a significant decline in profitability. Each year since 1972 has been a deterioration from the previous year's operating income, as increases in revenues have been more than offset by increases in operating costs. In 1976, net operating revenues (operating revenues minus operating expenses) fell to less than half of the 1971 level. During this same period net income fell by 40.2 percent. The year-to-year decline in financial performance is reflected in Table 2.

Table 2

Selected financial statistics--class I carriers

Year	Number of carriers[1]	Operating ratio[2]	Operating profit margin[3]	Return on equity[4]
1971	71	87.6%	12.4%	16.1%
1972	74	88.9	11.1	14.7
1973	75	90.6	9.4	13.7
1974	81	92.1	7.9	13.3
1975	77	93.5	6.5	12.5
1976	76	95.5	4.5	8.3

[1]Carriers with annual operating revenues of $1,000,000 or more.
[2]Total operating expenses divided by total operating revenues.
[3]Net percentage difference between operating revenues and operating expenses divided by operating revenues.
[4]Net income divided by average of beginning and end-of-year stockholders' equity.

Source: *Transport Statistics in the United States*, 1971-1974, and ICC annual reports.

Class I carriers dominate the industry in terms of operating revenues, route-miles, miles traveled, passenger-miles and other measures. Within this class, Greyhound and Trailways carriers dominate.

However, an overwhelming majority of carriers (over 800) were class II and class III carriers. Analysis reveals that the financial performance of class II and class III intercity passenger carriers has been below the level of that for the class I carriers.

Important findings of the study include the following:

a. The industry fulfills a vital role in serving a unique segment of the population (often without any other transport alternative) with greater service frequency and at more locations than any other public transport mode. Bus passengers tend to be from low income and non-professional occupational groups. The relatively young and old, students, military personnel and retirees are heavy users. A high proportion of trips are for relatively short distances and are for non-business purposes.

b. A significant long range reversal of the downward trend in industry financial performance appears unlikely (in the absence of severe auto-use restrictions, fuel shortages or financial assistance).

c. Declining financial performance and decreasing passenger demand on certain routes and schedules has apparently resulted in curtailment of services on some of these routes, and in longer schedules for replacing or refurbishing older buses.

d. Selective competition by Amtrak and airlines in certain markets is increasing (although the private auto is the greatest competitor). Such competition occurs primarily in heavy traffic corridors, such as the Northeast Corridor. Geographic constraints on competitive opportunities are evident. The intercity bus industry serves approximately 15,000 communities. Amtrak serves approximately 512 stations. CAB certificated air carriers serve approximately 422 communities, with an additional 223 localities receiving commuter and/or intrastate air passenger service.

e. The outlook for charter services and package express is optimistic. Present cost-allocation systems do not clearly reveal the profits among regular-route, charter, and package express service. However, analysis suggests that regular route passenger service is subsidized by the other services.

f. Special low fares designed to increase long-distance travel have succeeded in increasing such travel. A scarcity of in-depth industry information and analysis, however, does not permit refined analysis of ridership and demand elasticity. This is especially true for shorter trips which make up most intercity bus trips (during 1976 the average trip distance was approximately 115 miles).

The industry appears to have reached maturity. It has found a well-defined place in the passenger transportation market. The service that it provides to this market may be the dominant consideration in determining the future role of this mode in a national transportation system. The current financial performance of the industry merits the dedicated concern of those who are charged with responsibility for setting policy which will affect the long term viability of the intercity bus transportation system in fulfillment of its appropriate role in serving the public.

The Bureau's preliminary study shows that considerable further study of the intercity bus industry is warranted. Recommended areas for further study include the demand for bus service, market analysis, development of analytical tools, and regulatory options.

A limited number of copies are available from the Interstate Commerce Commission, Bureau of Economics, Room 5355, 12th Street and Constitution Avenue, Washington, D.C. 20423. After this supply is exhausted, copies may be obtained at a nominal cost from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. Refer to GPO Stock Number 026-000-01112-4.

3. The price index for railroads:

The accompanying table and chart revise and update the Railroad Freight Price Index developed by the Bureau of Labor Statistics. The index measures monthly changes in the average price of transporting all freight by rail. The overall railroad price index for April 1978 was 200.1 compared to 208.0 for the previous month.

The 1978 freight rate levels remained unchanged at 4.9 percent over 1977 levels. Nonmetallic Minerals posted a four-tenths of 1 percent increase (.4). Metallic Ores, Clay, Concrete, Glass, Stone Products, and Primary Metal Products ratios increased one-tenth of 1 percent (.1). These minor movements in rail freight rates were mostly due to tariff reissuances and a few adjustments in intrastate rates.

Price indexes for total railroad freight and wholesale price index, all commodities
(1969=100)

Total railroad freight

Yr.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1969	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.6	105.2
1970	105.2	105.2	105.2	105.2	105.3	110.0	110.1	110.1	110.2	110.2	110.2	119.1
1971	119.2	119.3	119.3	123.4	123.4	123.7	123.7	123.5	123.6	123.5	123.4	123.2
1972	123.3	126.0	126.0	126.1	126.2	126.2	126.2	126.1	126.1	126.0	127.4	127.4
1973	127.4	127.4	127.4	127.4	127.4	127.4	127.6	127.7	131.1	133.6	133.8	133.8
1974	134.8	137.5	143.2	144.0	144.3	144.8	157.5	157.8	158.0	158.0	158.0	158.3
1975	158.3	158.3	158.3	158.3	165.8	165.9	175.2	175.6	175.7	180.2	180.8	180.9
1976	181.0	181.2	181.2	185.4	187.1	187.4	187.4	187.5	187.6	191.1	191.1	191.6
1977	198.0	198.0	198.2	198.3	198.2	198.2	198.4	198.4	198.5	198.5	198.6	207.8
1978	207.8	207.8	208.0	208.1								

Wholesale price index

Yr.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1969	97.9	98.4	99.0	99.1	99.8	100.3	100.5	100.4	100.6	100.8	101.5	102.0
1970	102.6	103.0	103.2	103.3	103.3	103.7	104.1	103.7	104.2	104.1	104.1	104.2
1971	105.0	105.9	106.1	106.4	106.9	107.3	107.6	107.9	107.5	107.4	107.5	108.4
1972	109.2	110.1	110.2	110.3	111.0	111.5	112.4	112.6	112.9	112.7	113.3	115.4
1973	116.9	119.2	121.9	122.5	125.1	127.7	126.1	133.4	131.2	130.2	130.7	133.1
1974	137.7	140.4	142.2	143.4	145.5	146.2	151.8	157.2	157.0	159.8	161.4	161.0
1975	161.3	160.8	160.0	161.6	162.5	163.1	165.0	165.9	166.9	168.0	167.3	167.8
1976	168.4	168.4	168.6	170.2	170.7	171.9	173.1	172.5	173.4	173.9	174.3	175.7
1977	176.5	178.4	180.2	182.4	183.3	182.5	183.0	182.7	183.4	184.3	185.0	186.1
1978	187.7	189.9	191.4	193.8								

Note: The index is designed to measure changes in the prices of shipping goods by rail in the U.S. The representative prices and sample used for the index reflect the railroads' prices for shipping a fixed set of commodities under specified and unchanging conditions. The index is not intended to measure changes in railroad revenue or in shipper costs that result from changes in services or mode.

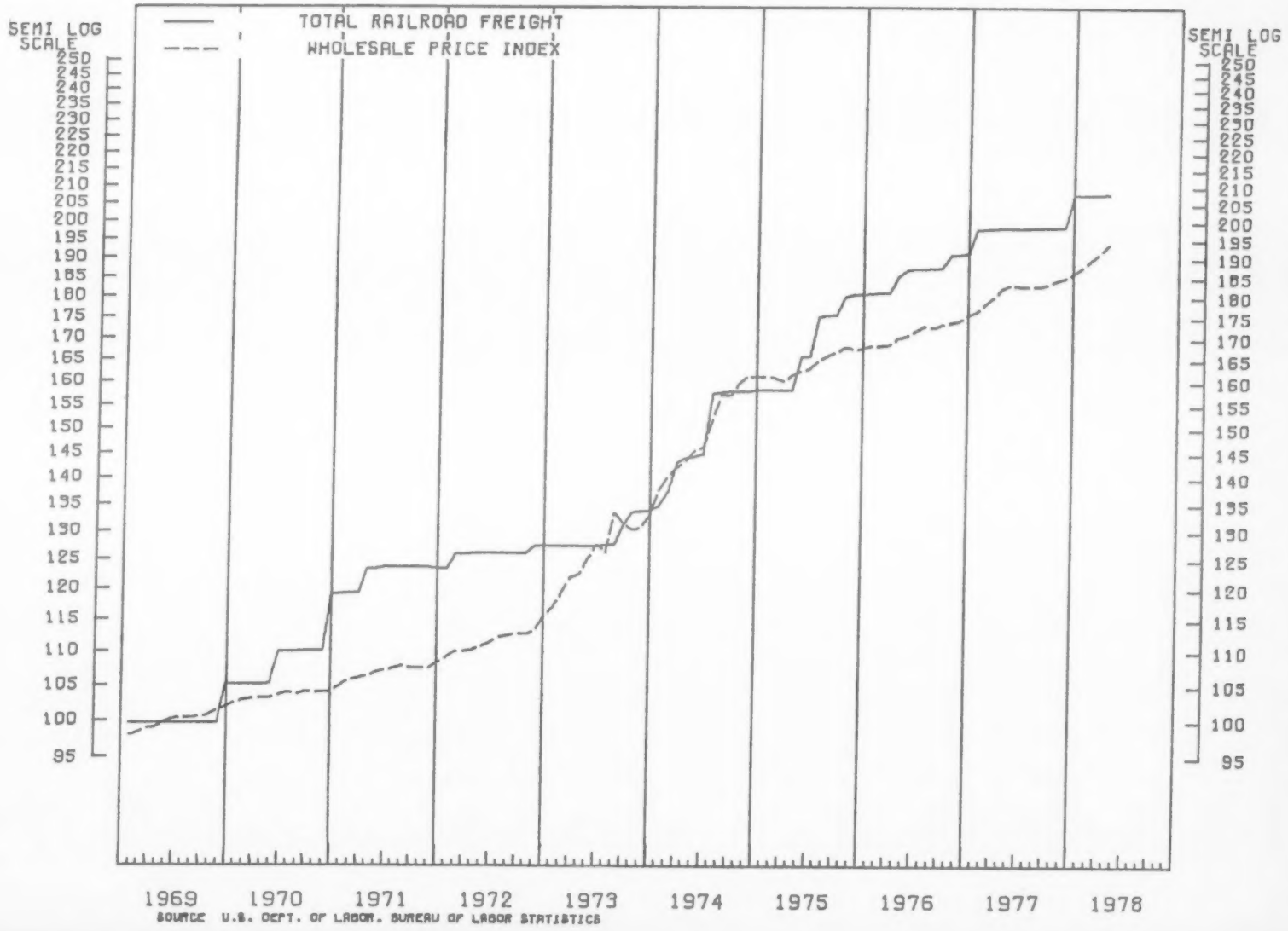
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Price index for all railroad freight and selected commodities, and wholesale price index (unadjusted) 1974-1978 by quarters (base 1969=100)

Commodity Code	01	10	11	14	20	24	26	28	32	33	37		
Commodity	Farm products	Metallic ores	Coal	Nonmetallic minerals	Food products	Wood or lumber products	Pulp, paper or allied products	Chemical or allied products	Clay, concrete, glass or stone products	Primary metal products	Transportation equipment	Total railroad freight	Wholesale price
1974 - 1st qtr.	133.4	142.5	142.0	139.5	137.8	137.2	133.3	136.7	141.1	141.7	141.3	138.5	140.0
2nd qtr.	139.5	148.8	148.2	145.2	143.7	142.7	138.8	142.7	146.7	147.9	147.5	144.4	145.0
3rd qtr.	154.5	164.2	163.5	157.9	156.9	154.4	150.8	156.0	161.6	161.7	162.6	157.8	155.3
4th qtr.	153.9	164.4	165.3	159.5	157.2	155.2	151.2	156.4	162.8	161.7	162.6	158.1	160.7
1975 - 1st qtr.	153.9	165.2	164.8	161.0	157.1	155.7	152.1	156.7	163.3	161.7	162.6	158.3	160.7
2nd qtr.	157.9	173.2	171.7	166.7	163.1	156.0	158.2	163.0	169.6	168.4	162.9	163.3	162.4
3rd qtr.	171.5	185.7	184.1	178.6	174.7	169.0	168.9	174.6	180.4	181.7	182.0	175.5	165.9
4th qtr.	176.6	189.5	189.5	183.2	179.2	173.6	171.6	179.4	184.8	187.3	186.5	180.6	167.7
1976 - 1st qtr.	177.9	189.3	190.0	184.8	179.4	174.2	171.9	179.7	185.0	187.6	186.6	181.1	168.5
2nd qtr.	181.9	198.4	202.1	192.9	185.2	176.9	176.5	183.3	193.2	190.6	188.8	186.6	170.9
3rd qtr.	183.5	201.4	203.1	192.7	186.3	177.9	176.9	183.6	193.8	190.8	188.9	187.5	173.0
4th qtr.	187.5	202.0	203.2	196.4	189.4	182.6	179.0	188.7	196.8	197.4	196.5	191.3	174.6
1977 - 1st qtr.	190.1	209.9	209.5	203.3	194.7	190.2	186.1	196.2	204.7	205.8	203.7	198.1	178.4
2nd qtr.	190.4	210.2	209.9	204.5	194.2	191.2	186.4	196.3	205.0	203.9	203.7	198.2	182.7
3rd qtr.	190.6	210.5	211.9	205.5	194.5	191.3	185.6	196.4	205.0	203.6	203.7	198.4	183.0
4th qtr.	194.0	214.0	215.3	208.8	197.8	194.2	188.2	199.5	210.9	207.0	206.2	201.6	185.1
1978 - 1st qtr.	200.4	220.9	222.4	215.0	204.1	200.3	192.3	204.5	217.5	213.5	211.9	207.9	189.7

Source: BLS Price Index for Railroad Freight.

PRICE INDEXES FOR TOTAL RAILROAD FREIGHT AND WPI ALL COMMODITIES
(1969 = 100)



SOURCE U.S. DEPT. OF LABOR, BUREAU OF LABOR STATISTICS

4. Freight car supply and utilization:

The number of serviceable freight cars, by type, owned or leased by class I railroads and private owners, is shown in Table 1 as of January for each of the years 1969 through 1978. Several distinct trends in car type ownership are evident for the period and reflect in part the shift of commodities between various types. These shifts in turn reflect shipper preferences and changes in the "mix" of commodities carried by railroads.

The most striking change is accounted for by unequipped (plain) boxcars, which decreased from 405,213 cars in 1969 to 276,178 in 1978, a decrease of almost 32 percent. Simultaneously, the higher-capacity covered hopper car accounted for an increase from 146,689 cars to 234,331 cars, or 59.7 percent. Equipped boxcars increased from 146,770 cars in 1969 to 181,131 in 1973, and then declined annually to 169,878 cars in 1978. Unequipped gondola cars showed a net decline of 14.8 percent, from 173,386 in 1969 to 147,655 in 1978. Equipped gondola cars, on the other hand, increased from 23,803 to 30,623 or 28.7 percent.

Other significant changes for the period include increases in the number of special hopper cars (23.4 percent), multi-level flatcars (76.5 percent) and TOFC flatcars (24.6 percent). There were substantial declines in the number of general service flatcars (26.8 percent) and stock cars (80.6 percent).

The overall total number of serviceable freight cars owned or leased by class I railroads and private owners decreased from 1,684,027 in 1969 to 1,637,538 in 1972. A net increase of over 79,000 cars, principally tank cars and covered hopper cars, brought the total to 1,716,937 in 1973. After a slight decline in 1974, the total increased to a peak of 1,723,605 in 1976. The total as of January 1, 1978, had declined to 1,648,680.

The average capacity of freight cars has increased annually from 1929 (46.3 tons) to 1978 (75.7 tons, based on the latest available data).

The annual number of carloadings by type of freight car is shown in Table 2 for the years 1969 through 1977. Although the carloadings showed a net decline of 19.1 percent, from 30,389 thousand in 1969 to 24,599 thousand in 1977, the increase in average capacity per car enabled the railroads to originate from 1.4 to 1.5 billion tons of traffic annually throughout the period. Thus, a decrease in carloadings for a particular car type may be wholly or partially offset by increases in the average capacity for the total number of such cars, notwithstanding decreases in the number of cars for certain car types.

Subject to the foregoing qualifications, several distinct trends are evident in Table 2. For example, the number of loads carried in unequipped boxcars declined by nearly 50 percent in the 1969-1977 period. Concurrently, covered hopper carloadings increased 36.3 percent. Loadings in general service hopper cars showed a net decline of over 2 million. Substantial net declines are also shown for (1) refrigerator cars (from 1.1 million to 0.8 million); (2) stock cars (69,101 to 13,135); and (3) general service flatcars (369,840 to 199,182). Multi-level flatcars, primarily auto racks, exhibited a net increase from 438,627 in 1969 to 544,612 in 1977; after reaching an intervening high of 534,276 in 1973. Most of the remaining car types showed variable trends over the period.

Freight car utilization by car types has shown mixed results in terms of the number of trips per year handled by each type. Table 3 shows these data for the 1969-1977 period. Due to the large grain movements of 1973, the 1975 recession, and the rather slow recovery in 1976 and 1977, trends for the entire 1969-1977 period tend to be somewhat obscured for several car types. A few types of cars show definite trends, viz., boxcars equipped, general service flatcars, TOFC, and stock cars, all of which showed declines in the number of trips per year.

Other measures of freight car utilization are shown in Table 4, for the years 1969 through 1976. The number of loaded cars per train decreased from 41.5 in 1969 to 37.3 in 1976. The percentage of loaded to total cars per train ranged from 59.2 percent in 1969 to the low for the period of 54.6 percent in 1975, and increased to 55.5 percent in 1976. The actual number of empty cars per train followed an erratic pattern before reaching the high point in 1975 at 31.1 cars, and decreasing in 1976 to 29.9 cars. The average train in 1976 consisted of 67.2 cars representing a slight decrease from the 1975 average.

The average load per car, measured by net ton miles per loaded car mile, increased steadily from 43.5 net tons in 1969 to 59.9 net tons in 1976. Net ton miles per freight car day ranged from a low of 1,302 in 1971 to a high of 1,759 in 1976. For car miles per freight car day, the peak was reached in 1973 at 54.5 million, and the low point of 49.6 miles occurred in 1975, then increased to 52.9 miles in 1976. Except for 1971, the percentage of total cars on line that were unserviceable increased annually from 4.9 percent in 1969 to 8.1 percent in 1976.

Charts 1 through 4 show average daily loadings, by month, for the period January 1, 1975, through March 1978, for 8 major types of freight cars. Due to their use for grain movements, plain boxcars and covered hopper car loadings are shown together in Chart 1. Since 1975, loadings for both types of cars have remained generally equal. However, due to the substantially greater capacity of covered hopper cars, actual tonnage carried by such cars undoubtedly exceeds the tonnage carried in plain boxcars.

Chart 2 shows the average daily loadings for general and special service open hopper cars. While the latter car type has shown a very stable rate of loadings (probably due in part to unit train operations), general service hopper cars have shown a highly seasonal loading pattern, except for December 1977 and January 1978 when they had a sharp drop. Generally, this pattern consists of peak movements in May or June and in September or October. Low points occur mostly in July and either December or January.

Chart 3 shows average daily loadings for TOFC and equipped boxcars. These two types of cars, of course, handle a wide variety of manufactured goods. It is not surprising, therefore, that the trends for both types of cars are closely parallel.

Chart 4 shows the loading trends for plain gondolas and tank cars (shown together for convenience only). Plain gondola loadings have shown an erratic movement over the period until October 1977 when a sharp drop took place and continued through January 1978 when an upward trend began. Tank car loadings have maintained a nearly constant level of about 6,000 carloads per day for the entire period.

Table 1

Serviceable cars owned or leased and private cars on line, by type of car,[1] 1969-1978

Type of car	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Boxcars unequipped	405,213	387,168	368,488	351,179	340,163	333,607	328,028	321,480	302,899	276,178
Boxcars equipped	146,770	160,252	169,321	174,716	181,131	178,329	178,169	173,679	171,054	169,878
Covered hoppers	146,689	150,447	160,670	169,251	186,219	204,926	219,362	228,265	230,069	234,331
Refrigerators	103,085	106,732	102,148	103,474	107,023	104,721	104,024	100,815	98,017	90,799
Tanks	105,781	104,418	100,127	92,000	162,350	165,309	169,237	170,876	168,018	166,208
Gondolas unequipped	173,386	167,805	163,943	160,801	162,131	158,794	157,913	156,481	154,436	147,655
Gondolas equipped	23,803	25,448	24,947	24,799	26,582	28,553	28,807	30,292	31,340	30,623
Hoppers general service	382,492	363,860	354,069	351,103	348,670	330,568	321,852	325,955	326,964	318,933
Hoppers special service	30,292	32,384	36,448	38,354	34,572	34,765	34,774	37,231	38,562	37,389
Flats										
General service	32,335	33,114	32,452	31,465	29,726	28,840	28,044	26,755	25,206	23,661
Multi-level	18,719	24,698	27,264	25,087	25,220	27,498	29,582	29,692	30,341	33,034
TOFC	36,599	33,972	37,150	34,482	36,642	40,980	45,378	46,225	45,025	45,589
Other	26,255	30,104	32,231	32,153	33,966	34,904	36,182	38,644	41,209	40,265
Stock	15,146	11,962	10,334	8,883	6,621	5,307	4,980	4,423	3,637	2,943
All others	37,462	38,855	38,797	39,791	35,921	33,558	34,241	32,792	32,250	31,194
Total	1,684,027	1,671,219	1,658,389	1,637,538	1,716,937	1,710,659	1,720,573	1,723,605	1,699,027	1,648,680
Average carrying capacity (tons)	65.6	67.2	68.4	69.6	70.5	71.6	72.9	73.8p	75.5p	75.7p

p - Preliminary.

[1]Does not include Canadian R.R. owned.

Source: Association of American Railroads.

Table 2

Number of cars loaded by type of car, 1969-1977

Type of car	1969	1970	1971	1972	1973	1974	1975	1976	1977
Boxcars unequipped	6,129,622	5,631,128	4,871,745	4,707,493	4,721,706	4,175,903	3,161,336	3,169,017	3,092,599
Boxcars equipped	2,147,546	2,110,464	2,322,451	2,491,358	2,526,722	2,260,256	1,955,186	2,032,948	2,001,328
Covered hoppers	2,412,178	2,520,099	2,566,326	2,855,655	3,051,290	3,138,557	3,059,582	3,242,523	3,287,988
Refrigerators	1,110,633	1,117,344	1,057,480	1,082,306	1,069,631	1,006,708	930,739	896.857	848,234
Tanks	1,547,760	1,437,458	1,302,063	1,341,502	1,418,956	1,423,529	1,249,781	1,289,647	1,311,559
Gondolas unequipped	2,837,888	2,631,653	2,358,122	2,418,633	2,616,360	2,554,535	2,026,063	2,026,098	2,012,769
Gondolas equipped	291,473	373,565	373,229	396,039	460,268	467,909	427,886	471,584	432,465
Hoppers general service	8,567,008	8,194,079	7,280,845	7,218,796	7,418,279	7,212,116	6,844,969	6,618,313	6,233,380
Hoppers special service	1,109,531	1,145,125	1,154,666	1,206,378	1,341,236	1,460,174	1,384,402	1,452,729	1,384,133
Flats									
General service	369,840	358,752	322,797	311,492	314,759	300,060	221,402	200,369	199,182
Multi-level	438,627	370,182	460,954	496,132	534,276	435,929	368,607	506,520	544,612
TOFC	2,009,383	1,985,744	1,908,481	2,058,440	2,232,244	2,189,064	1,840,280	2,015,585	2,237,106
Other	358,434	341,811	399,509	428,209	415,374	388,707	335,118	346,154	364,033
Stock	69,101	51,606	37,604	30,713	32,345	24,874	20,729	12,474	13,135
All others	990,105	876,410	797,287	812,509	823,813	837,417	694,822	672,298	636,753
Total	30,389,129	29,145,420	27,213,559	27,855,655	28,977,259	27,875,738	24,520,902	24,953,116	24,599,276

Source: Association of American Railroads.

Table 3

Trips per year by type of car, 1969-1977

Type of car	1969	1970	1971	1972	1973	1974	1975	1976	1977
Boxcars unequipped	17.4	17.3	15.4	15.5	16.0	14.4	11.4	11.9	12.2
Boxcars equipped	15.3	14.2	14.8	16.2	16.5	15.0	13.7	14.5	14.1
Covered hoppers	17.6	18.0	16.6	17.6	17.2	16.3	15.2	15.7	15.2
Refrigerators	10.9	11.0	10.3	11.3	11.1	10.7	10.3	10.3	9.9
Tanks	14.3	13.9	13.2	10.0	10.0	9.8	8.5	8.5	8.5
Gondolas unequipped	19.8	19.4	17.6	18.8	20.8	20.1	16.3	16.5	16.0
Gondolas equipped	13.1	17.2	17.7	18.9	19.4	19.2	17.4	18.7	16.3
Hoppers general service	25.2	25.1	21.8	23.5	25.4	25.5	24.5	23.3	21.1
Hoppers special service	37.2	37.5	49.6	37.6	40.9	44.3	42.1	42.7	37.1
Flats									
General service	13.0	12.5	11.4	12.0	12.5	12.4	10.0	9.3	9.8
Multi-level	24.7	17.0	19.6	22.0	21.5	16.7	13.4	18.8	18.1
TOFC	56.1	57.4	52.2	59.9	61.6	53.4	42.7	47.3	51.4
Other	13.8	12.3	14.1	14.2	13.3	11.7	9.9	9.7	9.4
Stock	5.6	5.0	4.0	4.2	5.2	5.0	4.3	3.2	4.1
All others	26.8	22.2	21.6	24.8	26.5	26.7	23.0	23.4	21.5
Total	19.8	19.5	18.1	18.7	19.5	18.6	16.6	16.9	16.5

Source: Association of American Railroads.

Table 4

Freight car operating averages, class I railroads, 1969-1976

	1969	1970	1971	1972	1973	1974	1975	1976
Freight cars per train:								
Loaded	41.5	40.5	38.4	38.0	37.8	37.4	37.5	37.3
Empty	28.5	29.6	29.5	29.2	27.8	28.0	31.1	29.9
Total	70.0	70.1	67.9	67.2	65.6	65.4	68.6	67.2
Percent loaded of total cars per train	59.2	57.8	56.5	56.5	57.7	57.2	54.6	55.5
Net tons per loaded car	43.5	44.9	45.6	46.7	48.7	50.1	51.7	59.9
Net tons per freight car day	1,356	1,345	1,302	1,400	1,530	1,548	1,402	1,759
Car miles per freight car day	52.6	51.8	50.5	53.0	54.5	54.0	49.6	52.9
Percent unserviceable freight cars on line[1]	4.9	5.2	5.2	5.5	5.6	6.0	7.2	8.1

[1]Average during year.

Chart 1
Average Daily Loadings by Month and Car Type
1975-1977 and 1st Qtr. 1978
Plain Boxcars and Covered Hoppers

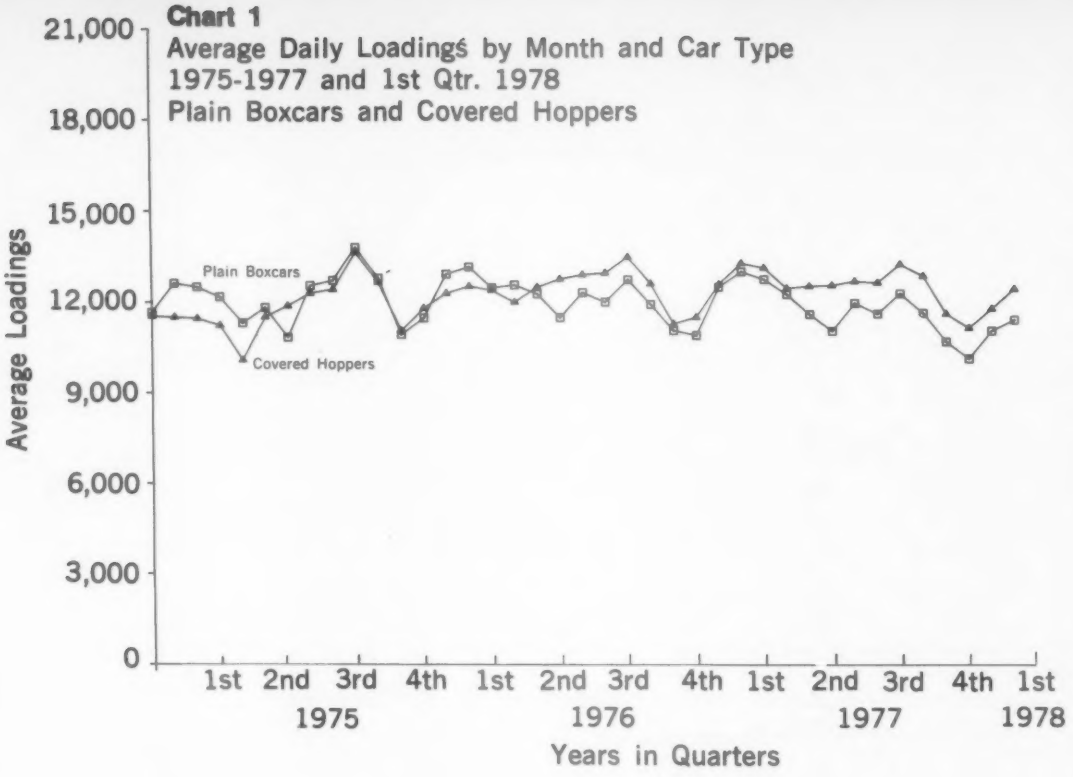


Chart 2
Average Daily Loadings by Month and Car Type
1975-1977 and 1st. Qtr. 1978
General Service Hoppers and Special Service Hoppers

Chart 3
Average Daily Loadings by Month and Car Type
1975-1977 and 1st. Qtr. 1978
Equipped Boxcars and TOFC Flats

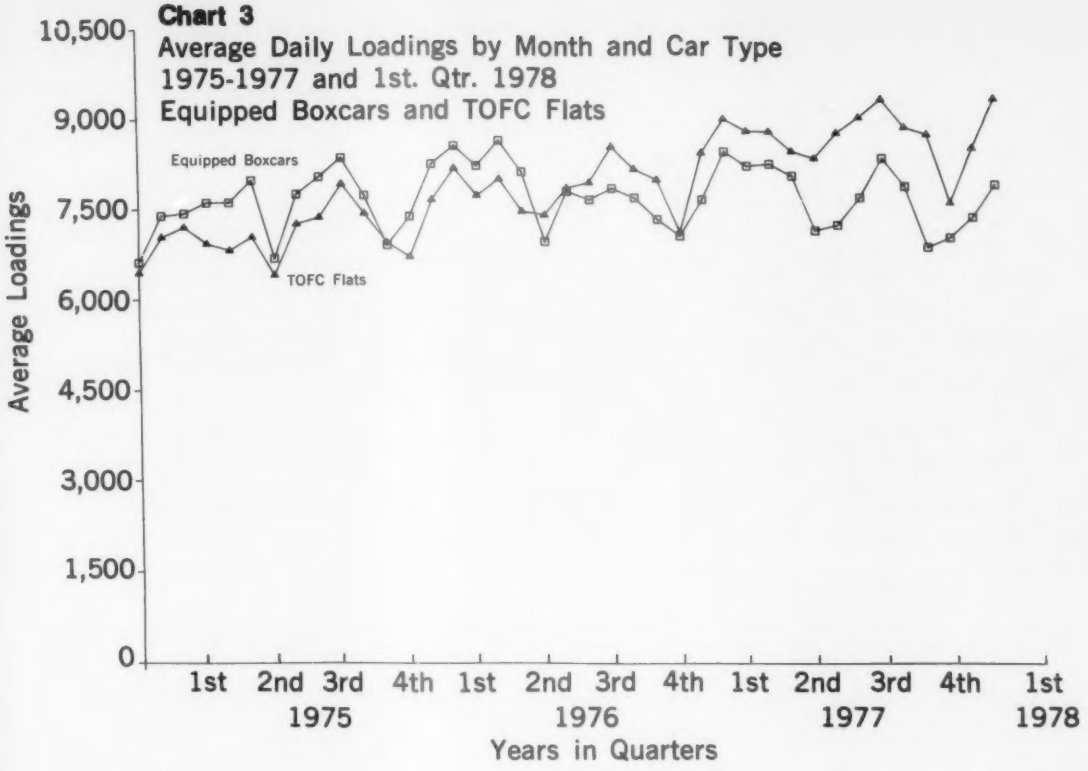
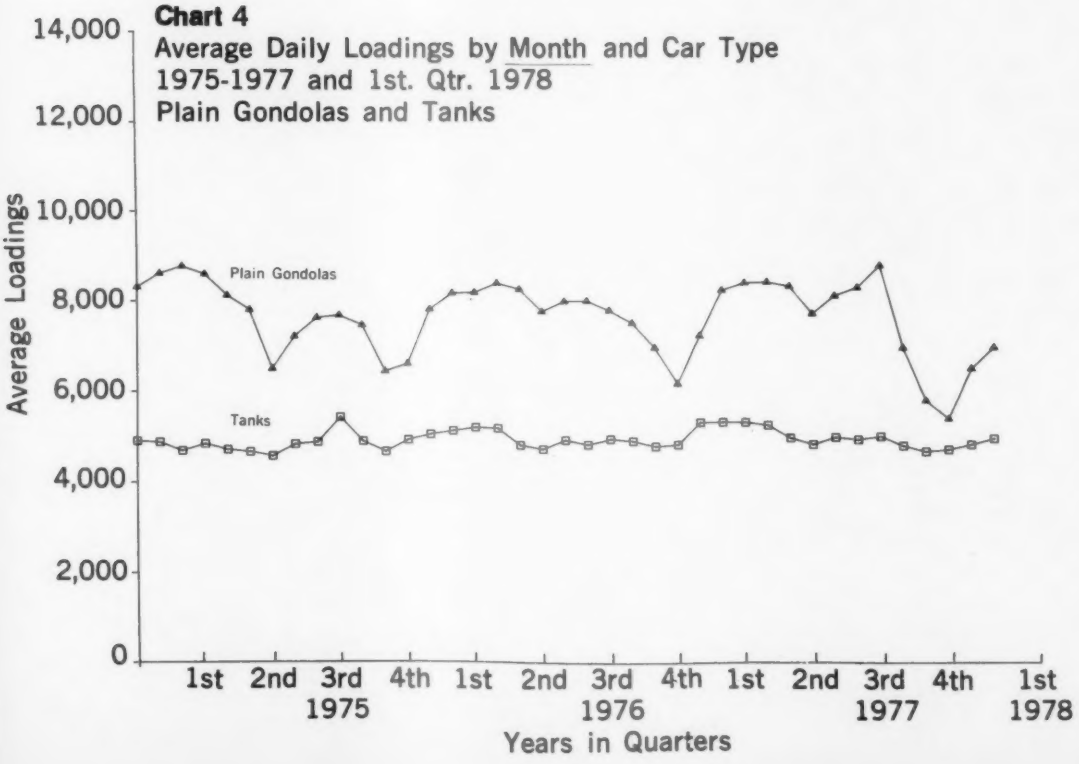


Chart 4
Average Daily Loadings by Month and Car Type
1975-1977 and 1st. Qtr. 1978
Plain Gondolas and Tanks



5. Measures of rail freight traffic and car use, selected years, 1947-1977:

Indicators of freight car use by class I railroads for selected years are shown in the following table. The statistics (loaded and empty car miles, revenue carloads originated, revenue and nonrevenue ton miles, and aggregate capacity) apply to cars owned and leased by class I railroads. Although cars owned by class II railroads and others also contribute to freight traffic, class I figures are considered satisfactory for the purpose of determining trends.

The following are measures of car use: (1) the percentage of total car miles which are loaded and (2) the ratio of revenue ton miles and nonrevenue ton miles per ton of aggregate freight car capacity. The same measure for individual roads or areas of use may differ considerably from the average figures shown in the table because of differences in (1) length of haul, which affects the ton miles per carloading; (2) use of specialized cars adapted to customer needs rather than general use, which influence load mileage; and (3) assignment of cars to a particular route of service, which affects the utilization of cars.

Revenue carloads originated in 1977 were 2.2 percent above the previous year, and revenue ton miles increased 5.2 percent. The proportion of loaded to total car miles was 56.8 percent, up slightly from the 55.4 percent in 1976. Effective use of capacity, measured in ton miles produced per ton of capacity, has fluctuated in recent years with a 1.6-percent increase occurring in 1977 over 1976.

Measures of freight car use,[1] *class I railroads, selected years, 1947-1977*

Year	Car miles *Billions*			Percentage of total car miles which are loaded	Revenue carloads originated	Revenue ton miles	Non-revenue ton miles	Total revenue and nonrevenue ton miles	Revenue ton miles per revenue carload originated	Aggregate capacity of freight cars in service[2] (millions of tons)	Revenue and nonrevenue ton miles per ton of capacity
	Loaded	Empty	Total								
					Millions	*Billions*	*Billions*	*Billions*			
1947	21.4	10.8	32.2	66.4	37.0	654.7	41.9	696.6	17,711	89.2	7,807
1951	20.6	10.6	31.2	66.0	34.9	646.6	30.9	677.5	18,504	92.7	7,311
1955	20.1	11.1	31.2	64.5	32.8	623.6	18.6	642.2	19,035	91.2	7,040
1959	17.8	10.8	28.6	62.3	28.2	575.5	12.7	588.2	20,390	92.3	6,375
1963	17.1	11.0	28.1	60.9	27.5	621.7	11.2	632.9	22,618	85.9	7,364
1967	17.4	12.2	29.6	58.9	27.5	719.5	10.8	730.3	26,148	93.7	7,797
1968	17.8	12.3	30.1	59.3	27.6	744.0	11.7	755.7	26,935	93.5	8,079
1969	18.0	12.4	30.4	59.2	27.7	767.8	10.0	777.8	27,692	94.3	8,245
1970	17.3	12.6	29.9	57.8	27.0	764.8	10.4	775.2	28,311	95.6	8,112
1971	16.5	12.7	29.2	56.6	25.2	739.7	10.4	750.1	29,387	96.5	7,774
1972	17.1	13.2	30.3	56.5	25.7	776.9	10.9	787.8	30,224	96.1	8,199
1973	18.0	13.2	31.2	57.7	27.0	851.8	11.7	863.5	31,560	95.4	9,052
1974	17.6	13.1	30.7	57.2	26.2	851.0	10.5	861.5	32,451	95.7	9,002
1975	15.1	12.5	27.6	54.7	22.9	754.6	10.0	764.6	32,909	95.8	7,982
1976p	15.8	12.7	28.5	55.4	22.3	785.3	11.1	796.4	35,215	93.7	8,499
1977p	16.3	12.4	28.7	56.8	22.8	826.2	11.2	837.5	36,237	97.0	8,634

p Preliminary.

[1]Ratios are based on actual figures. Data may not add due to rounding.
[2]Cars in service of class I railroads--owned and leased at close of year.

Source: *Transport Statistics in the United States*, and prior releases. Carloadings, unless otherwise noted, *Freight Commodity Statistics, Class I Railroads in the United States*, and prior releases.

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